INSTALLATION GUIDE

(Preprint Edition)

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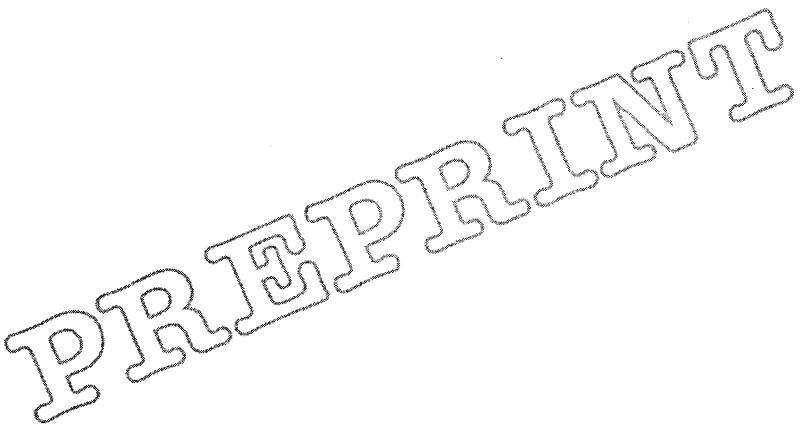

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1 OVERVIEW

This Installation Guide is written to help anyone installing or upgrading an NGEN workstation. The guide is organized as follows:

Section 1, Overview, is what you're reading right now. Don't stop.

Section 2, Processor Modules, shows you how to install a Processor Module, add Memory Expansion Cartridges, and plug I/O devices into the I/O panel.

Section 3, Module Connection, shows how the latching mechanism operates and how modules are added to the workstation.

Section 4, Mass Storage Modules, discusses the installation procedure and shows any operator controls present on mass storage modules (like disk drives).

Section 5, Communications and Graphics Modules, shows you how to install these types of modules and also covers any operator controls.

Section 6, Monitors, shows you how to install the monitor supplied for your workstation and also shows you where the operator controls are.

Section 7, Keyboards and Pointing Devices, shows you how to connect a keyboard to the monitor and how pointing devices are connected to the keyboard.

Section 8, Power Connection, tells you how and where to install the 36-Volt Power Supply Modules for your workstation and gives you final installation information.

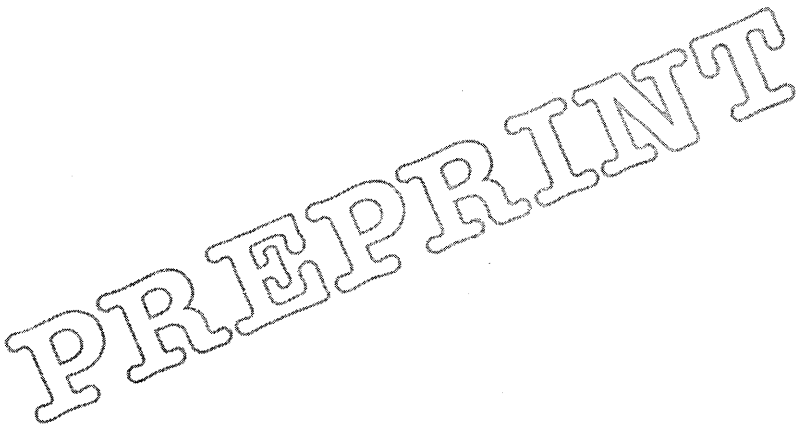
PRELIMINARY

Warning

Make sure that you install all of your modules before connecting the workstation to the ac line. Also, disconnect the workstation from the ac line before changing modules.

We suggest that you follow this guide from start to finish, but feel free to skip any irrelevant sections. If, for example, you do not have any communications or graphics modules, skip Section 5 and go on to install your monitor.

If you are upgrading a workstation (or simply moving a module to another workstation), make sure that you refer to every section of the Operator's Guide that might be relevant to the installation.



2 PROCESSOR MODULE

Unpacking

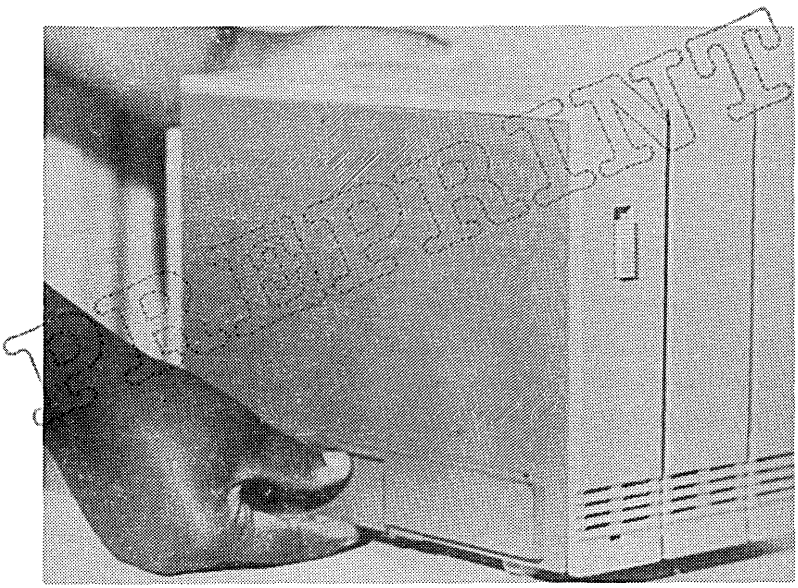
Find the box containing the Processor Module and open it from the top.

Lay the open box on its side and remove the Processor Module with its packing material.

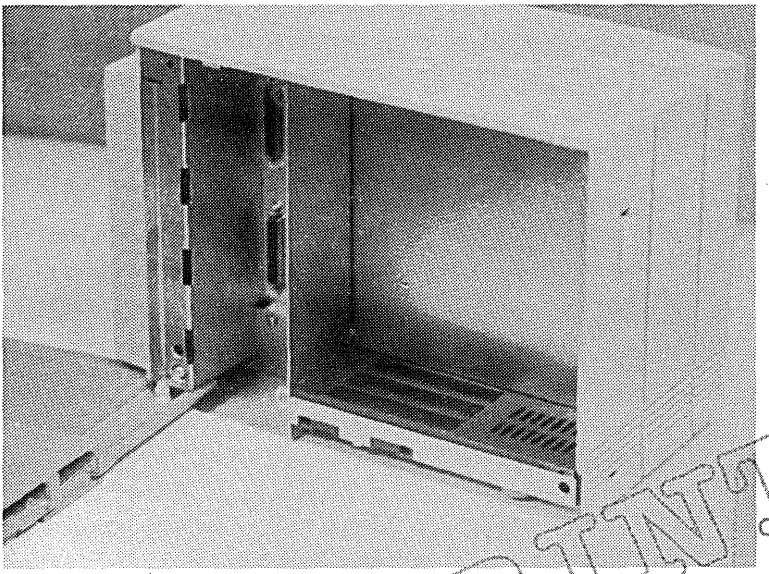
Remove the packing material.

Removing the Side Cover

On the side of the Processor Module, find the tab at the bottom of the side cover. Push the top of the tab while gently pulling out from the bottom.



Pull the side cover down and off to reveal the three Memory Expansion Cartridge slots.



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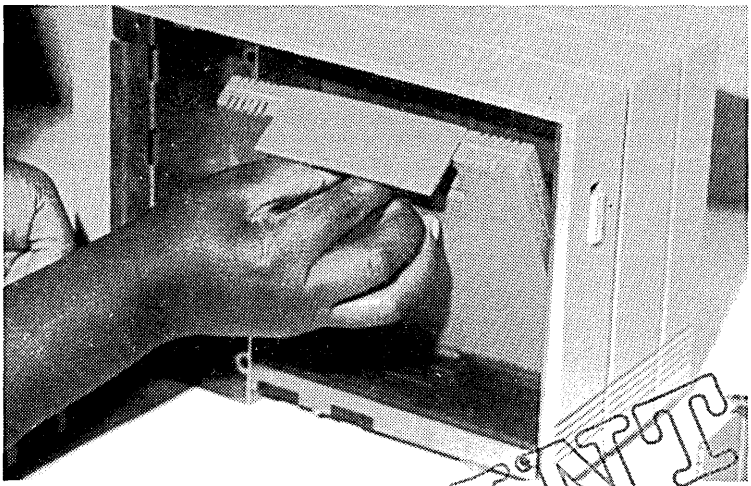
Installing a Memory Expansion Cartridge

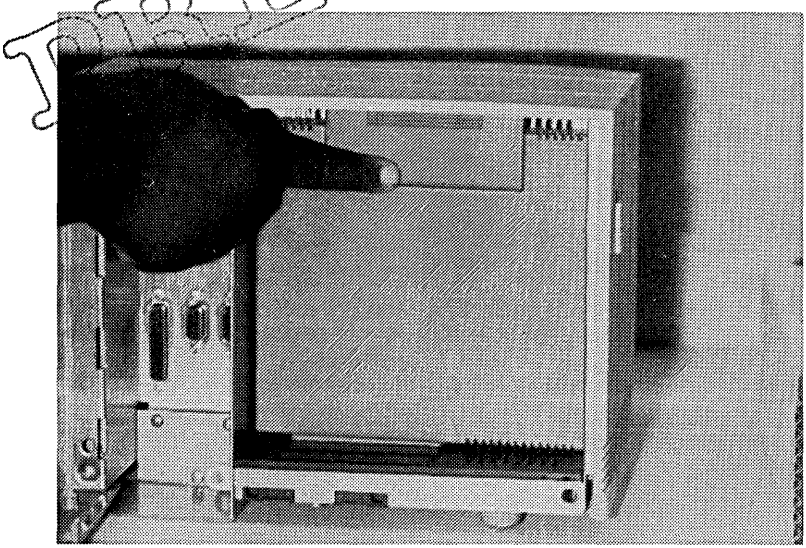
You can install up to three Memory Expansion Cartridges in the slots provided in the Processor Module. Unpack all of the Memory Expansion Cartridges for your workstation.

Note that the Memory Expansion Cartridge has a movable part opposite its connector end. Move the part to reveal the two finger grips.

Grasp the Memory Expansion Cartridge by the two finger grips and insert into the first slot (the one next to the inner metal wall of the Processor Module).



When the Memory Expansion Cartridge is in the first slot, press down on the movable part with your finger to lock the cartridge in place.



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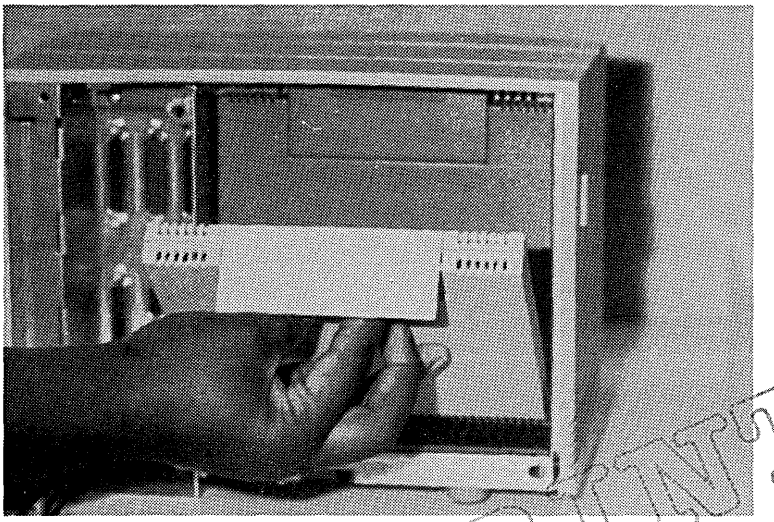
If a second or third Memory Expansion Cartridge is to be installed at this time, repeat the above procedure. Install the cartridges next to each other, **do not skip any slots.**



Connecting I/O Devices

Open the I/O cover on the Processor Module by pulling back the two button fasteners at the top and bottom of the cover.

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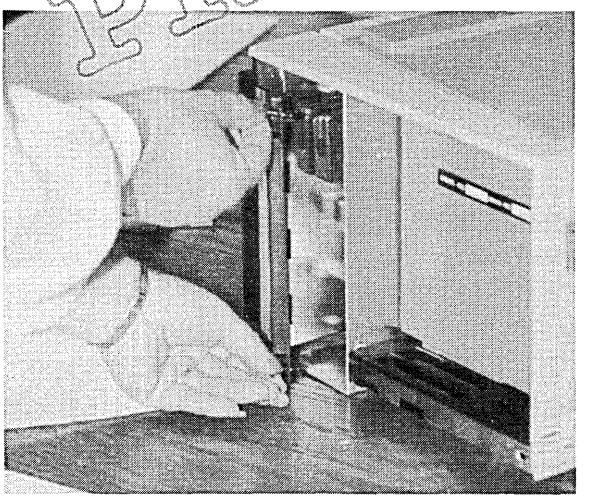
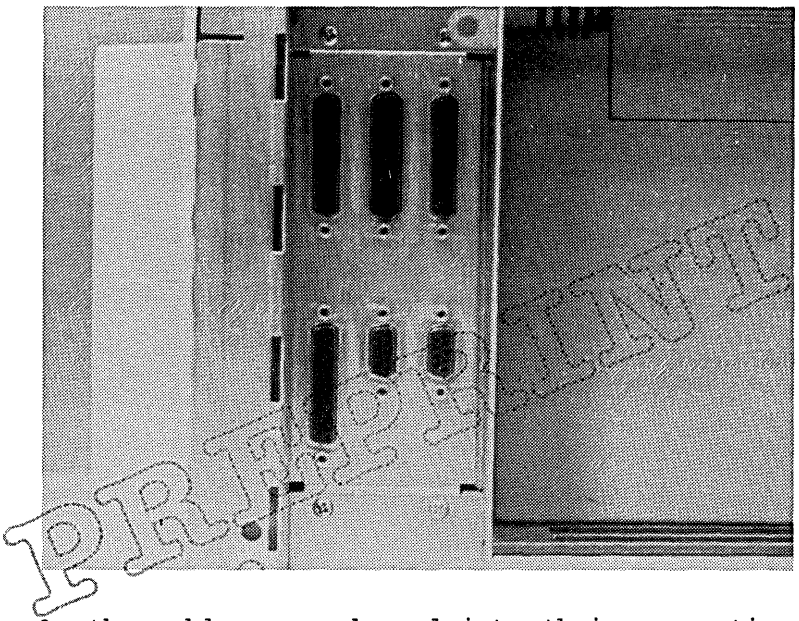


Notice that RS-232-C, parallel, and cluster connectors are provided on the Processor Module's I/O panel. On the top row of I/O connectors are, from left to right, RS-232-C Channel A, the video connector, and RS-232-C Channel B. On the bottom row, from left to right, are the parallel printer port and two cluster connectors.

See the Processor Manual for your workstation for technical information on the RS-232-C, parallel and cluster interfaces.

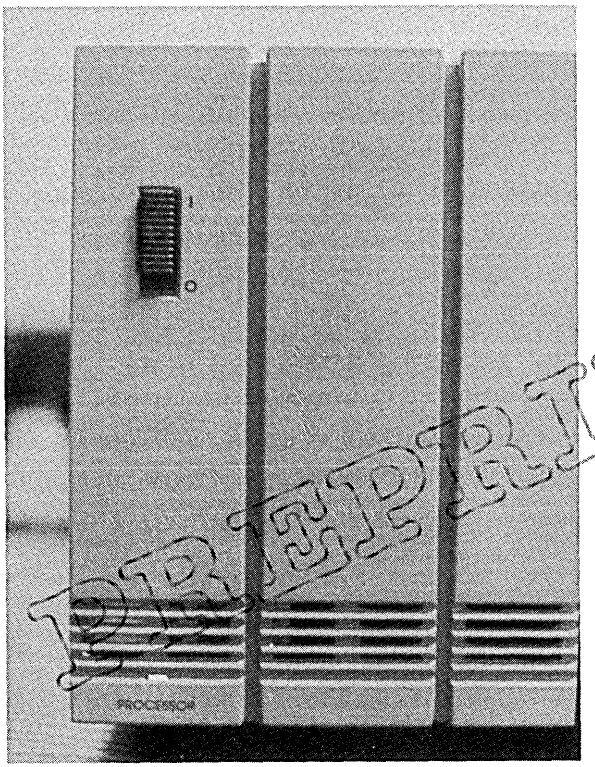


As the cables are plugged into their respective connectors, feed the cables underneath the back of the Processor module.

Do not replace the I/O cover or the side cover yet.

Processor Module Operator Controls and Indicators

On the front of the Processor Module is an ON/OFF switch. To turn the Processor Module on and to enable power to other modules, slide the switch into the up position. When the Processor Module is powered up, an LED at the bottom of the module lights up.



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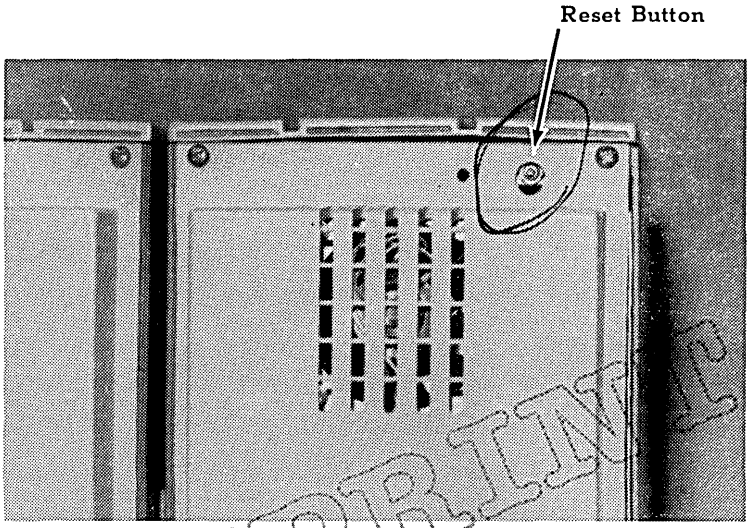
On the back of the Processor Module is the RESET button. The reset button is used to set all of the circuitry in the Processor Module at an initial state. Refer to the Operator's Guide for more information about using this button properly.



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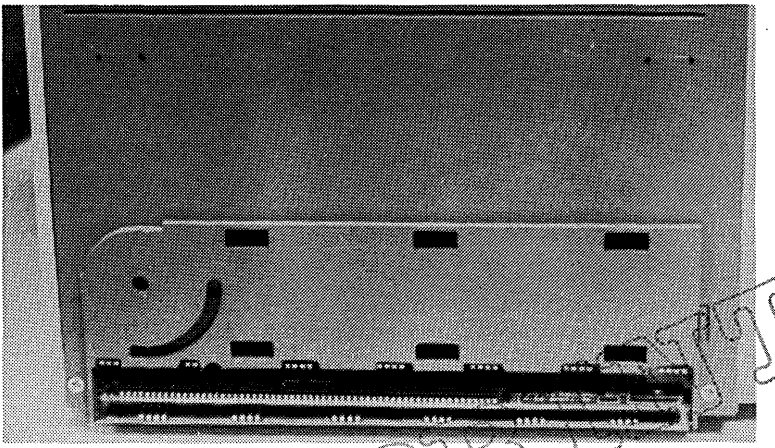
3 MODULE CONNECTION

The leftmost module in the workstation is always the Processor Module. Other modules are electrically and mechanically connected to the Processor Module by a simple latching mechanism. The Processor Module half of the latching mechanism looks like this:



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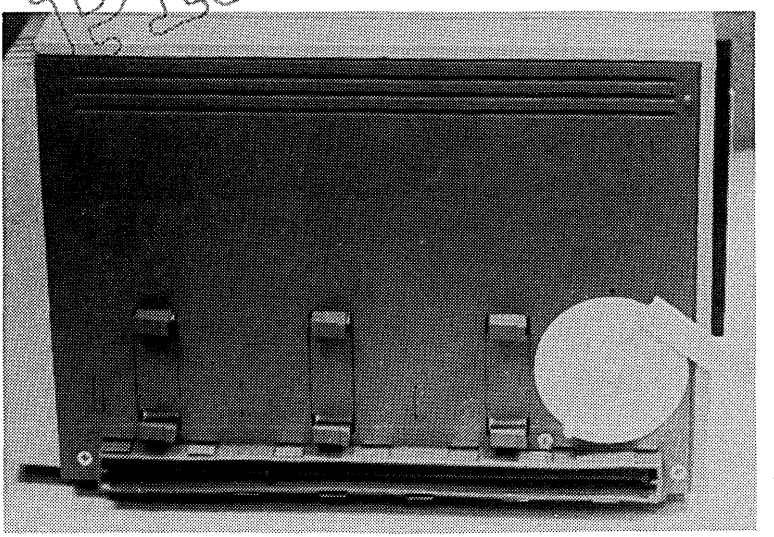
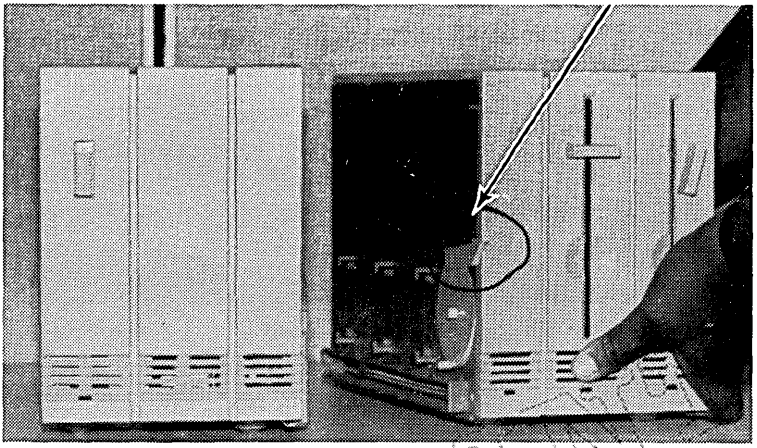
And the mating half of the latching mechanism looks like this:

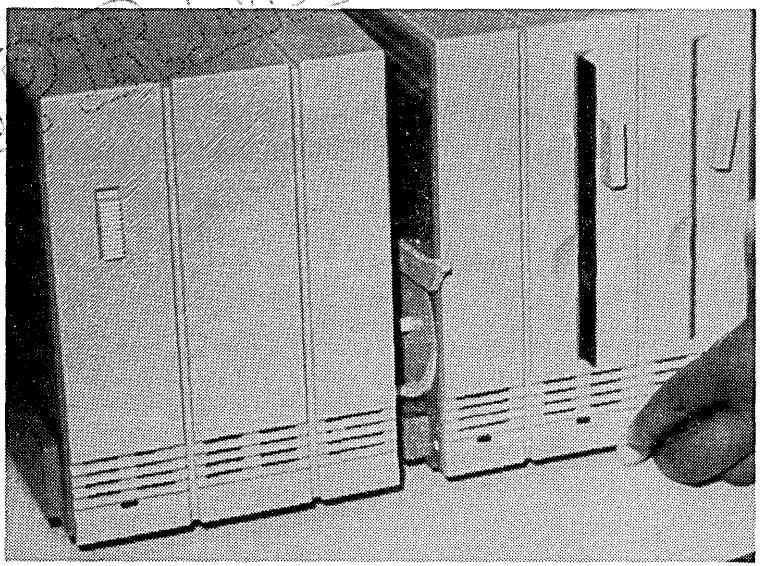


Set the two modules up on a table so that the two halves of the mechanism face each other. Make sure that the latch at the front of the mating module is all the way up as shown.

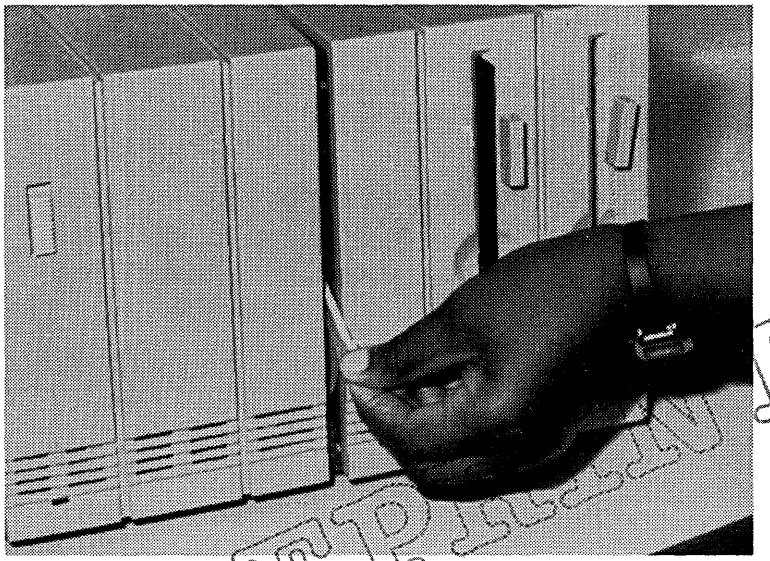
Latch



Push the modules together. It may help to mate the back of the two modules first and then move them together at the front.



While a moderate force is required on the latch to lock the modules together, do not force the latch or you will break it. If the latch does not move, try refitting the modules again. Pull down on the latch to lock the two modules together.



Note: On some table surfaces, the rubber feet on the bottom of the modules stick to the surface, not allowing the module connectors to mate properly. After the modules are locked together, push them together at the bottom to ensure complete electrical contact of the module connectors.

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DUAL FLOPPY DISK MODULE

Unpacking

Find the box containing the Dual Floppy Disk Module and open it from the top.

Lay the open box on its side and remove the Dual Floppy Disk Module with its packing material.

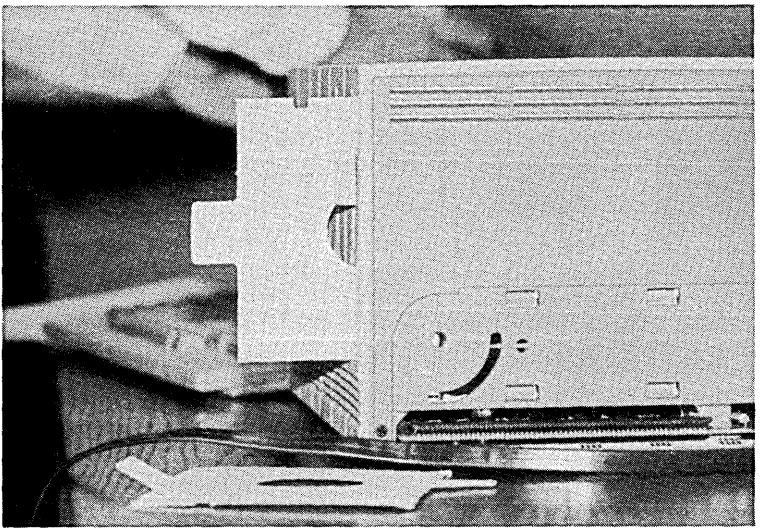
Remove the packing material.

Installation

Connect the Dual Floppy Disk Module to the workstation as described in Section 3, "Module Connection."

Remove two shipping cards (one in each drive) by pressing the tab at the left of the drive slot and pulling out each card. (The other style of floppy disk drive requires that you turn the drive latch 90 degrees counterclockwise and pull each card out.) The shipping cards protect the read/write heads in the floppy disk drives. **Damage to the Read/write heads will result if these cards are not removed prior to powering up the workstation.**

Preliminary



Remember to reinsert the shipping cards while the Floppy Disk Drive Module is moved to another location.

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Dual Floppy Disk Module Operator Controls and Indicators

There are two styles of floppy disk drives available for the Dual Floppy Disk Module. Each style of module has two drive latches on the front of it.

For the first style of drive latch, a floppy disk can be inserted in one of the drives when the drive latch is in the vertical position. To lock a floppy disk in the drive, turn the latch clockwise 90 degrees.

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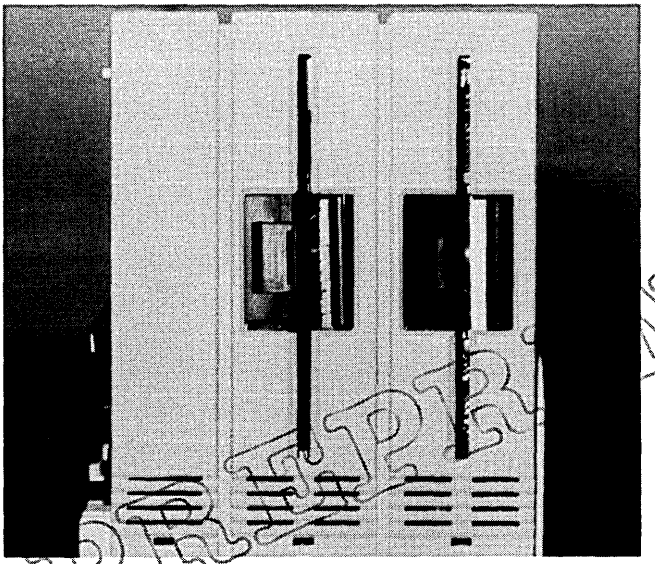
For the second style of drive latch, a floppy disk is inserted in one of the drives just by pushing it in the drive slot with your finger until you hear the floppy disk click into place. When you let go of the floppy, it should stay inside the drive. Close the latch by moving the bar on the right to the left until it clicks. To remove the floppy, push the tab to the left of the drive slot. The floppy should then spring out.



When the Dual Floppy Disk Module is selected by the Processor Module, an LED at the bottom left side of the module lights up. Also, LEDs directly below each disk drive indicate when that drive is active or when the Processor Module is checking to see if the disk drive latch is open or closed.

FLOPPY/HARD DISK MODULE

Unpacking

Find the box containing the Floppy/Hard Disk Module and open it from the top.

Lay the open box on its side and remove the Floppy/Hard Disk Module with its packing material.

Remove the packing material.

Installation

Connect the Floppy/Hard Disk Module to the workstation as described in Section 3, Module Connection.

Remove the shipping card from the floppy disk drive by pressing the tab at the left of the drive slot and pulling out the card. (A different style of floppy disk drive requires that you turn the drive latch 90 degrees counterclockwise and pull the card out.) **Damage to the Read/write heads will result if this card is not removed prior to powering up the workstation.**

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The shipping card protects the read write heads in the floppy disk drives. Remember to reinsert the shipping card while the Floppy/Hard Disk Drive Module is moved to another location.

Floppy/Hard Disk Module Operator Controls and Indicators

There are two styles of floppy disk drives available for the Floppy/Hard Disk Module. Each style of module has one drive latch on the front of it.

For the first style of drive latch, a floppy disk is inserted in one of the drives when the drive latch is in the vertical position. To lock a floppy disk in the drive, turn the latch clockwise 90 degrees. To remove a floppy, turn the latch counterclockwise 90 degrees. The floppy should then partially spring out of the drive.

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For the second style of drive latch, a floppy disk is inserted in one of the drives just by pushing it in the drive slot with your finger until you hear the floppy disk click into place. When you let go of the floppy, it should stay inside the drive. Close the latch by moving the bar on the right to the left until it clicks. To remove the floppy, press the tab to the left of the drive slot. The floppy should then spring out.

Photo unavailable

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When the Floppy/Hard Disk Module is selected by the Processor Module, an LED at the bottom left side of the module lights up. Also, LEDs directly below each disk drive indicate when that drive is active or when the Processor Module is checking to see if the disk drive latch is open or closed.

GRAPHICS CONTROLLER MODULE

Unpacking

Find the box containing the Graphics Controller Module and open it from the top.

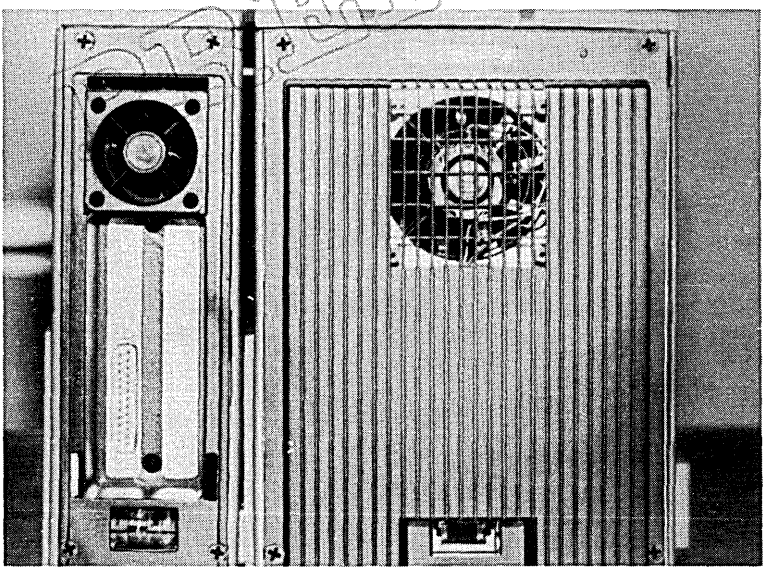
Lay the open box on its side and remove the Graphics Controller Module with its packing material.

Remove the packing material.

Installation

The Graphics Controller Module must be the first module connected to the left of the Processor Module. Connect the Graphics Controller Module to the workstation as described in Section 3, Module Connection.

Refer to the Color Monitor installation description to connect the video cable to the back of the Graphics Controller Module.



Graphics Controller Module Operator Controls and Indicators

There is one LED at the bottom front of the Graphics Controller Module to indicate that the Processor Module has selected the module.

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12" MONOCHROME MONITOR

Unpacking

Find the box containing the 12" Monochrome Monitor and open it from the top.

Lay the open box on its side and remove the monitor with its packing material.

Remove the packing material and place the monitor on the desk or table where you will use it (make sure that the monitor is not more than 1Ø ft away from the Processor Module).

Using a knife or scissors, cut the plastic ties holding the monitor cable coil.

Installation

Take the end of the monitor cable and plug it into the video connector on the top row of the Processor Module I/O panel as shown.

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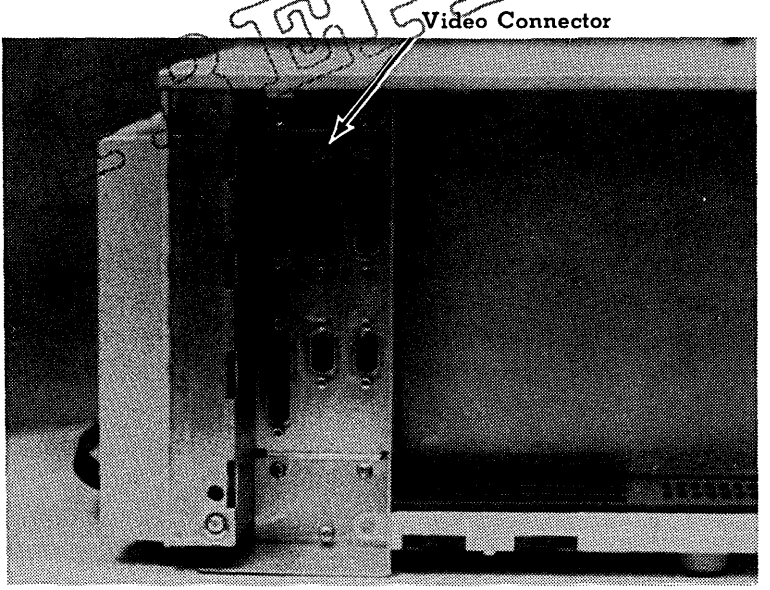
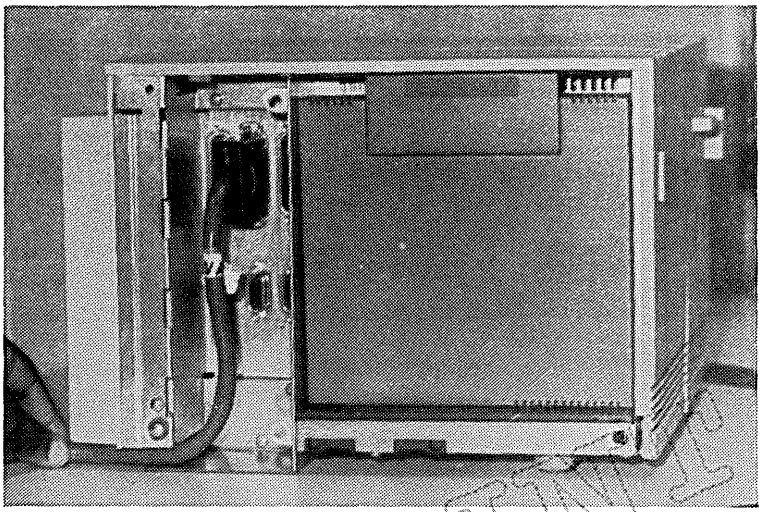


Using a small screwdriver, tighten the screw at the top of the connector and feed the cable underneath the back panel as shown.



12" Monochorome Monitor Operator Controls:

The brightness of the monitor can be adjusted by turning a thumbwheel control located under the left edge of the monitor. Turning the control towards you makes the screen brighter.

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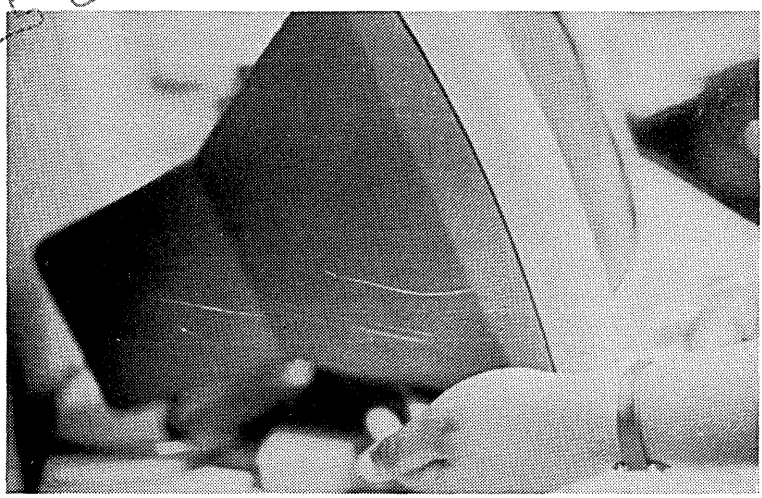


The viewing angle of the monitor can be adjusted by grasping both sides of the monitor housing and positioning it for the most comfortable viewing position.

PREPRINT

Unpacking

Find the box containing the Color Monitor and open it from the top.

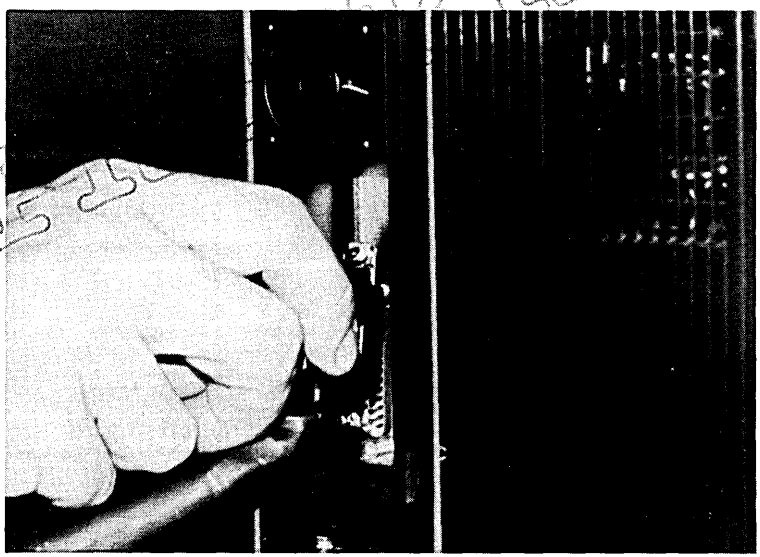
Lay the open box on its side and remove the monitor with its packing material.

Remove the packing material and place the monitor on the desk or table where you will use it (make sure that the monitor is not more than 10 feet away from the Processor Module).

Using a knife or scissors, cut the plastic ties holding the monitor cable coiled.

Installation

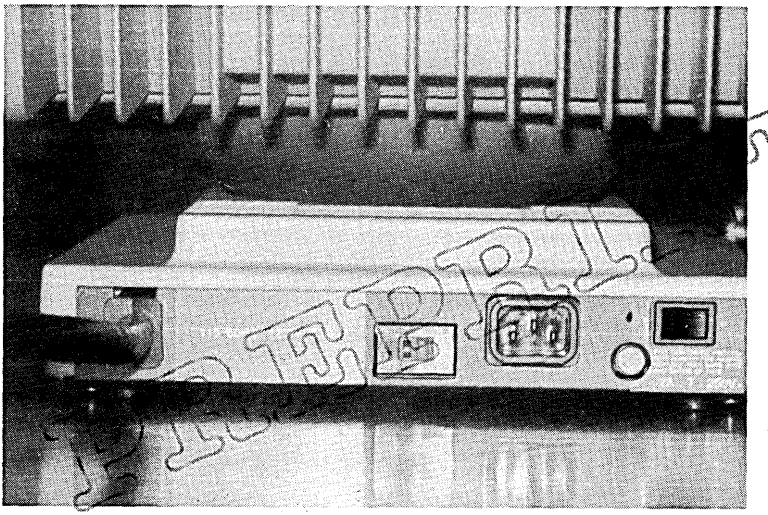
Take the end of the monitor cable and plug it into the connector on the back of the Graphics Controller Module as shown.



Using a small screwdriver, tighten the screw at the top of the connector and arrange the cable as desired.

On the rear panel of the monitor, plug one end of the line cord into the ac jack. Do not plug the other end of the line cord into the ac line yet. Also, make sure that the power switch at the far right of the rear panel shows an **Ø** (Off) on one of its faces.

Just to the left of the ac jack is the line selector switch. Make sure that the switch is set to the voltage in your area, either 115 or 23Ø Vac.



Color Monitor Operator Controls

The power switch for the monitor is located on the far right side of the rear panel. Power is applied to the monitor when a **1** (On) shows on one of the switch faces. Power is disconnected from the monitor when a **Ø** (Off) shows on the opposite switch face.

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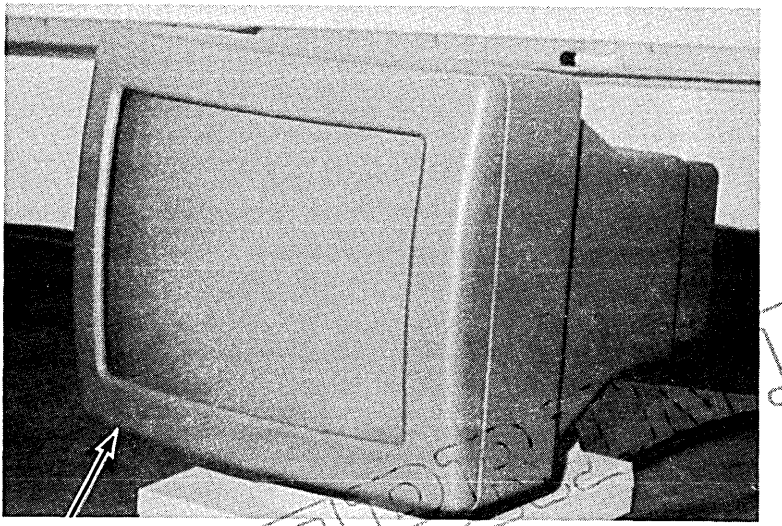
The brightness of the monitor can be adjusted by turning a thumbwheel control located under the left edge of the monitor. Turning the control towards you makes the screen brighter. Next to the brightness control is a degaussing switch to correct color impurities on the screen. To degauss the screen, press the button.



Controls

The viewing angle of the monitor can be adjusted by grasping both sides of the monitor housing and positioning it for the most comfortable viewing position.

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7 KEYBOARDS AND POINTING DEVICES

KEYBOARD

Unpacking:

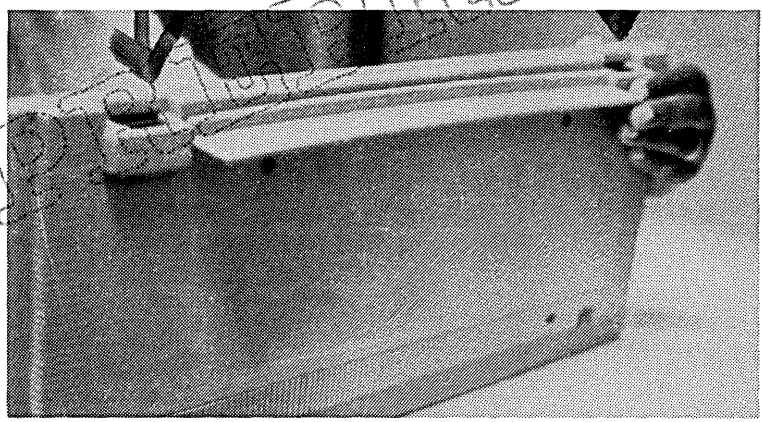
Find the box containing the keyboard and open it from the top.

Lay the open box on its side and remove the keyboard with its packing material and the coiled keyboard cable.

Remove the packing material and place the keyboard in front of the monitor on the desk or table where you will use it.

Installation:

There are two keyboard connection jacks available, one at each end of the keyboard as shown. Either jack can be used to connect the keyboard to the monitor.



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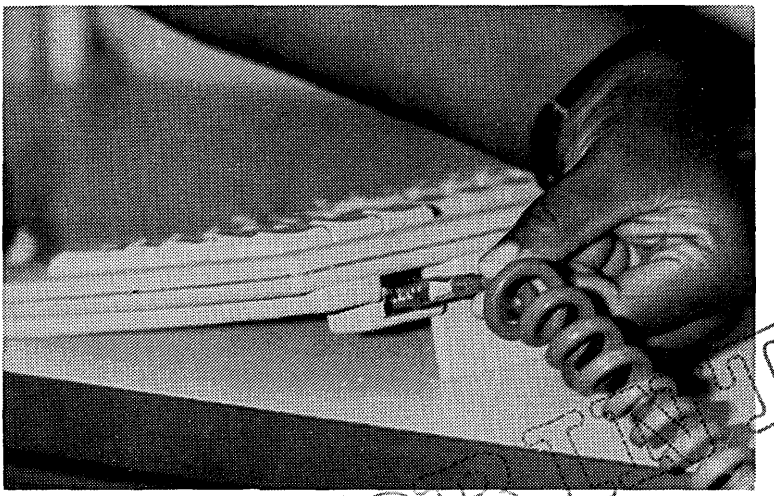
Take one end of the previously unpacked keyboard cable and push one end of it into the keyboard jack as shown. The keyboard cable connector fits into the keyboard jack only one way. You should hear a click when the connector is inserted correctly.



Next, push the other end of the keyboard cable into the monitor jack at the front edge of the monitor. The connector fits into the monitor jack only one way. You should hear a click when the connector is inserted correctly.

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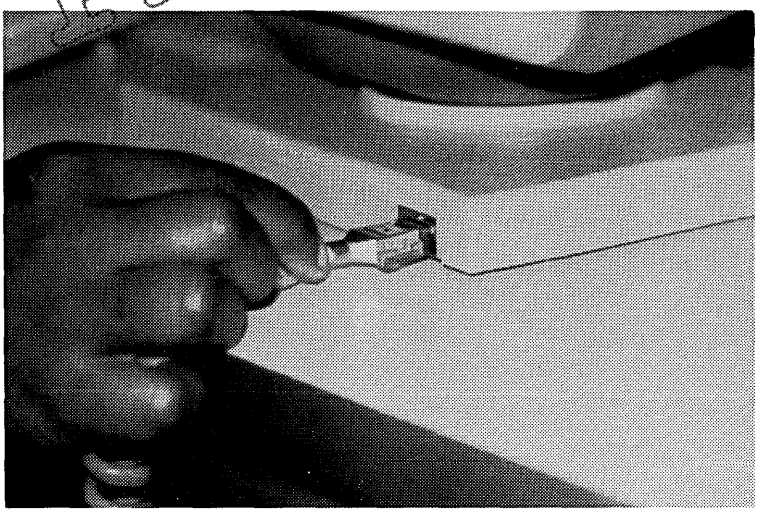


8 POWER CONNECTION AND FINAL ASSEMBLY

The power requirements for the workstation are based on a Power Code, where each 36-Volt Power Supply Module can supply a Power Code of 10. The cable from the first 36-Volt Power Supply Module is always plugged into the back of the Processor Module.

Every module has a label on its back panel indicating what its Power Code is. For example, notice on the back of the Processor Module that its Power Code is 4. With a 12" Monochrome Monitor (with a Power Code of 3) connected to it, the total Power Code is 7. If a Dual Floppy Disk Module (also with a Power Code of 3) is connected directly next to the Processor Module, the total Power Code for the workstation is now 10. If you add another module to the workstation, the Power Code will exceed 10, and another 36-Volt Power Supply Module must be plugged into the back of that added module.

Every module (except for components like keyboards and monitors) can accept the power input from a 36-Volt Power Supply Module. You can continue to connect modules to the workstation as long as you add another 36-Volt Power Supply Module for every 10 power units the workstation needs.

PREPRINT

CONFIGURATION RECOMMENDATIONS

There are several configuration recommendations that you should be aware of when installing a workstation

- The maximum number of modules per workstation is eight, not counting monitors, keyboards, or pointing devices.
- The recommended maximum number of 36-Volt Power Supply Modules is three. However, on a case-by-case basis, more than three 36-Volt Power Supply Modules may be used.
- The maximum number of disk modules per workstation is two. Only one of the modules can be a Dual Floppy Disk Module. Both disk modules can have a hard disk drive and, if so, both can have a Hard Disk Expansion Module. This results in a workstation with four hard disk drives.

- The maximum number of monitors per workstation is one.
- The maximum number of Ethernet (high speed local area network) Modules per workstation is one.
- The maximum number of low speed communications modules per workstation is two.
- The maximum physical length of the workstation should not exceed 24 inches.

36-VOLT POWER SUPPLY MODULE INSTALLATION

Unpacking

Find the box containing a 36-Volt Power Supply Module and open it from the top.

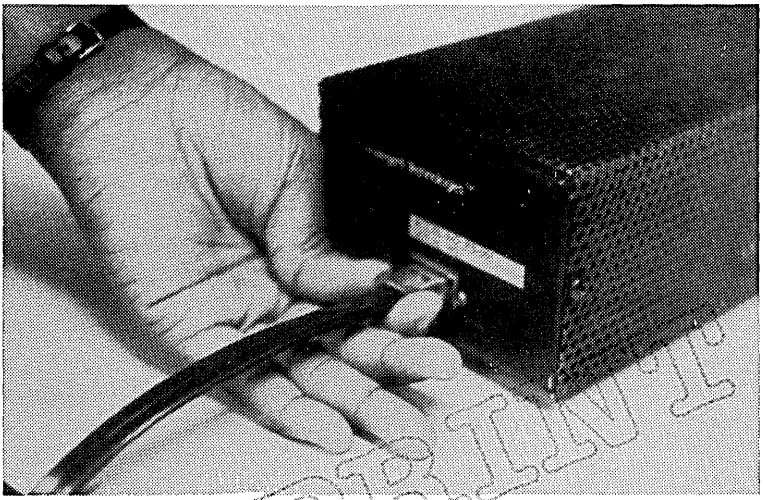
Lay the open box on its side and remove the 36-Volt Power Supply Module with its packing material and three cables (flat output cable, ac power cable, and short extension cable).

Remove the packing material and place the 36-Volt Power Supply Module on the floor near the workstation.

PREPRINT

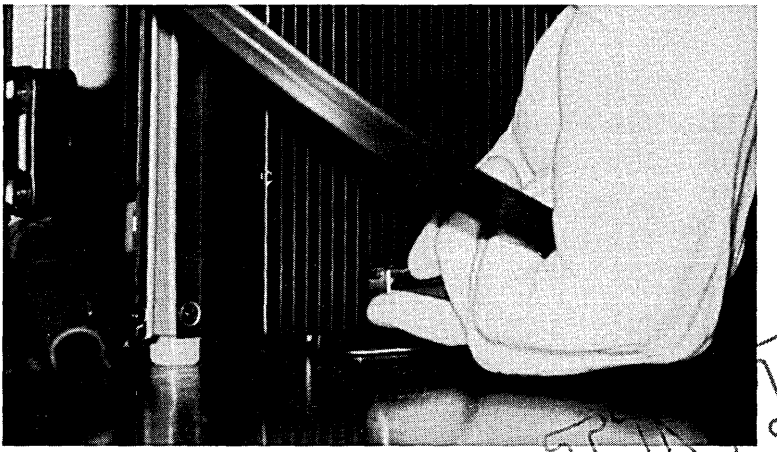
Installation:

Plug one end of the flat cable into the output jack of the 36-Volt Power Supply Module as shown. The cable connector fits into the output jack only one way. You should hear a click when the connector is inserted correctly.



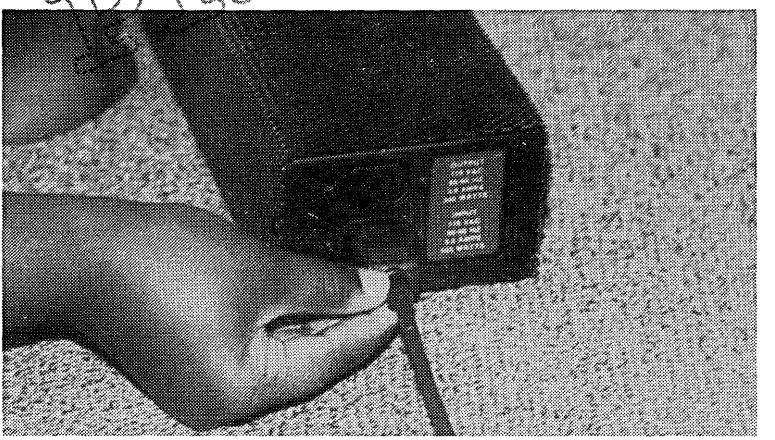
PREPRINT

Feed the other end of the flat cable up to the back of the Processor Module (the module on the far left) and insert it into the back panel jack provided. The cable connector fits into the output jack only one way. You should hear a click when the connector is inserted correctly.



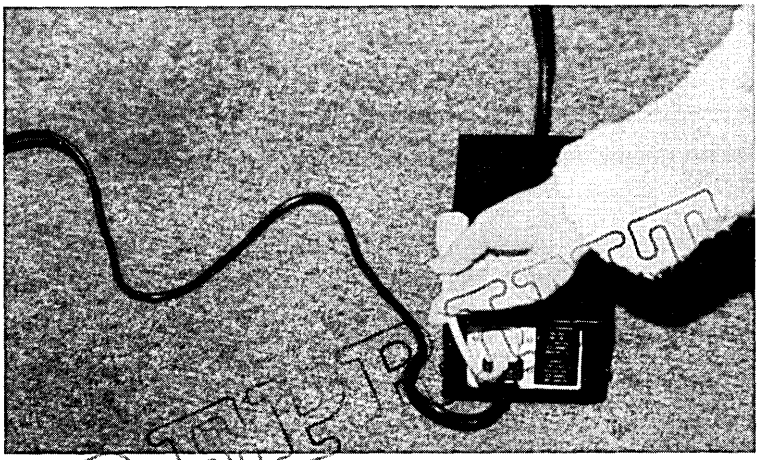
PREPRINT

At the other end of the 36-Volt Power Supply Module, plug the female end of the line cord into the AC jack.



Repeat the above procedure for additional 36-Volt Power Supply Modules required. Plug the output cable of each additional 36-Volt Power Supply Module into any module that causes the previous 36-Volt Power Supply Module Power Code to exceed 1Ø.

If you wish to stack multiple 36-Volt Power Supply Modules, use the short extension cord to make the AC connection from one 36-Volt Power Supply Module to another as shown.



PRELIMINARY

DO NOT PLUG THE MALE END OF THE AC CONNECTOR INTO AN AC RECEPTICAL YET.

FINAL ASSEMBLY

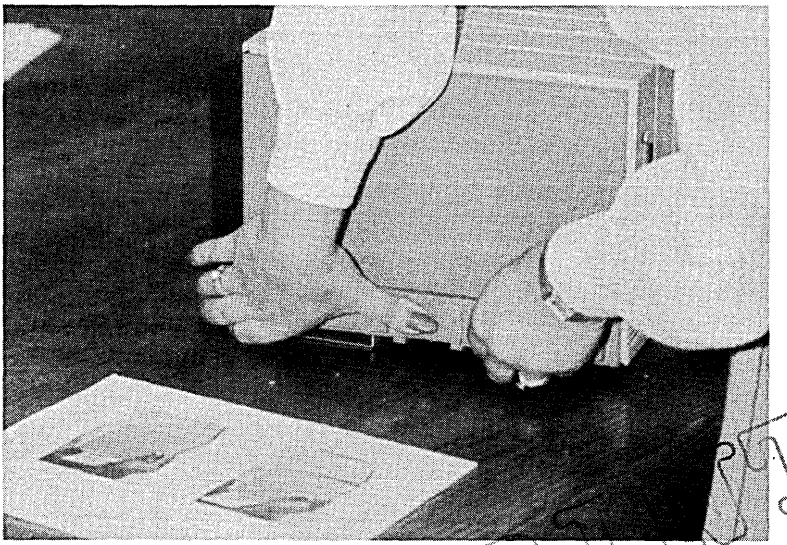
Processor Module I/O Cover and Side Cover:

On the Processor Module, make sure that all of the I/O cables are plugged in to the I/O panel and that the cables run underneath the back of the Processor Module.

Secure the I/O cover on the Processor Module by closing the cover and pressing on the two plastic buttons until they click into place.

Reinstall the side cover on the Processor Module by sliding the side cover up into the groove

underneath the top and front cover piece. Press on the bottom of the side cover as shown until it clicks into place.



PREPRINT

Installation Check and Power Up

If everything looks fine and the power switch on the Processor Module is in the OFF (down) position, plug the ac cord into a convenient ac receptical.

Move the power switch on the Processor Module to the ON position. If you have also installed a Color Monitor, press one side of the power switch on the rear panel of the monitor base until a **1** shows on one of the switch faces. Observe the following indications of a successful power up:

- The fan inside each module is running.
- An LED on each module lights up.
- The monitor shows a "T" and several asterisks (*) indicating the memory test is executing (you might have to adjust the brightness thumbwheel to see this).

If any of these indications do not appear, **disconnect all power to the workstation from the ac line** and check your installation. It could be that the power cables are not installed correctly or that the modules are not connected correctly.

If the power up is successful, the next step is to test the workstation with the software diagnostics. Refer to the Diagnostics Manual for more information about how to run the diagnostics for the workstation. Then refer to the Operator's Guide for an introduction to using the workstation.

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